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NEBRASKA

SPRING/SUMMER 2009

BLUEPRINT

UNIVERSITY OF NEBRASKA-LINCOLN COLLEGE OF ENGINEERING

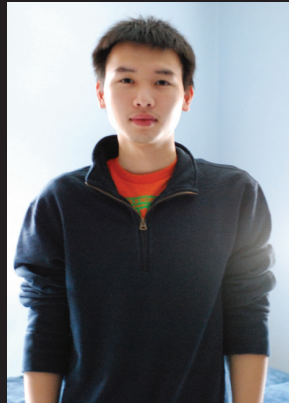
Student Research: Right Before Our Eyes



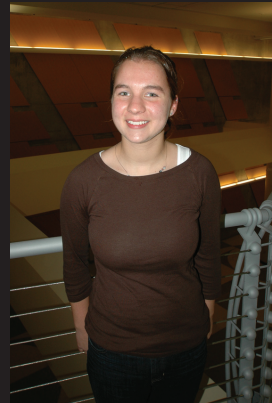
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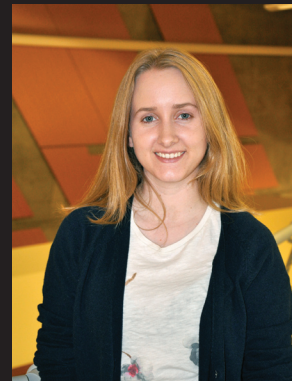
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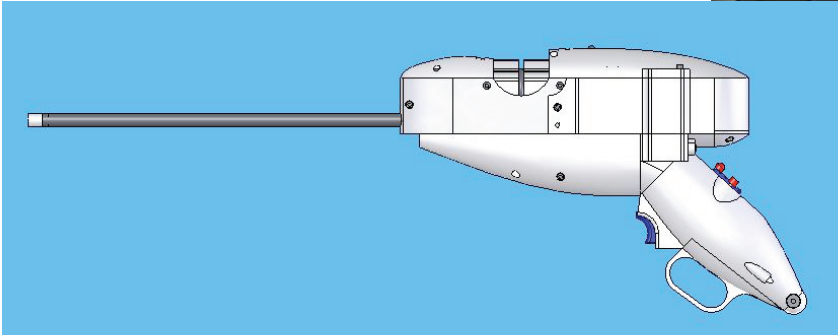
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FROM THE EDITOR

DEAR READERS:

I recall a television advertisement for University of Nebraska-Lincoln Admissions ending with, “This is what you get at a major research university.” Who wouldn’t want to go to a major research university? But what does that mean for us as engineering students? A whole lot, actually.

For students, being a major research university means there is a large amount of funding and opportunities available for students to participate in meaningful research. One of the great programs available to students is Undergraduate Creative Activities and Research Experiences, commonly known as UCARE. This program, sponsored by the Pepsi Endowment and Program of Excellence funds, pairs undergraduate students with faculty mentors for meaningful research experiences that benefit both the student and faculty.

UCARE is ideally a two-year program. More information is available at www.unl.edu/ucare. To hear about UCARE experiences firsthand, look no further than this issue. Read Ashley Johnson’s article about Dennis Bierle’s skin tissue research, Khoa Chu’s article about Martin Diaz’s semiconductor research or Joel Schulte’s article about Evan Luxon’s surgical tool research.

Another strong element of UNL’s engineering curriculum is the senior design project. Some projects involve significant real-world experience, such as Trevor Downey’s article about patient discharge process improvement at BryanLGH Medical Center.

Exciting research is also happening at the Omaha Campus with the Zero Net Energy Test House. See Lindsay Smith’s article for details. For a project going on right here in the middle of Vine Street, see my article about John Coburn’s emissions research.

Thanks to all the writers and our adviser, J.S. Engebretson, for making this issue possible. I hope you enjoy it!

Sincerely,

Brian D. Neilson
Editor-In-Chief

UCARE: BEHIND-THE-SCENES

BY ASHLEY JOHNSON



ABOVE: Research Assistant Dennis Bierle

DURING THE FALL of his sophomore year, Dennis Bierle became a research assistant after learning of an opportunity through a class announcement by one of his professors. As a pre-medical student, Bierle said research “would make my application more competitive when applying to medical school and would allow me to see if research is something I would like to explore as a career path.”

During the spring of his sophomore year, Bierle applied for his current UCARE project. Beginning in the fall of his junior year, Bierle started his UCARE project. He first learned the background information and the research system. The purpose of his project, Tissue Characterization using Hyperspectral Imaging, was to develop a method to analyze and evaluate skin cancer in a non-destructive and non-invasive

manner. It attempts to identify early stage melanoma more accurately than current diagnostic methods.

Hyperspectral imaging collects emitted light and is used near an infrared region. The tissue sample is illuminated, and the scattering and reflections of the light are observed. Bierle’s project measures the reflectance and wavelength amounts and uses statistical analyses to distinguish between benign and malignant tissues earlier than visual inspection.

Bierle’s UCARE faculty sponsor is Dr. Jeyamkondan Subbiah, assistant professor of biological systems engineering. In his first year of UCARE, Bierle assisted Subbiah with his research by collecting literature and data related to the project.

“He showed his maturity in grasping the big picture of the problem and how we can approach the problem in our research,” Subbiah said of Bierle.

Bierle also works closely with a master’s student, a Ph.D. graduate assistant, and Dr. Angie Paneer. Paneer’s lab takes care of the tissue cultures used in Bierle’s research. Paneer and others analyze the human tissues to aid Bierle in his research. Human tissue used in his research is acquired from the tissue bank at the University of Nebraska Medical Center. Bierle requests leftover malignant and benign tissue for comparative analysis.

The project does have some challenges. Due to the large amounts of data acquired, the

statistical analysis is extremely time consuming. The hours Bierle works on his UCARE project vary, but he averages 30-plus hours a week in the summer and five to 10 hours per week during the school year.

Bierle noted that the biggest difficulty is that the research is a highly iterative process with a large amount of samples. Lots of time is spent calibrating instruments to obtain the most accurate measurements. There is lots of testing, evaluation and protocols Bierle deals with conducting his research.

Bierle feels he has benefited from his research experience. “I really like learning the behind-the-scenes process of how new technologies are developed,” he said.

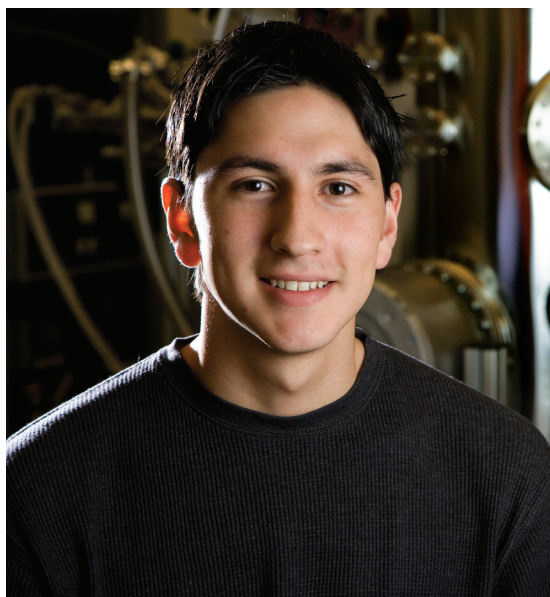
Although he now realizes he does not want to pursue research as a career path, he is glad he got to try it out. He notes that his UCARE project has definitely been a worthwhile experience and is different from anything he has ever done in a classroom.

Subbiah also emphasized the benefits of the UCARE program. He encourages students to get to know professors and their research.

“The best part of getting an undergraduate education in a research university is to get directly exposed to cutting-edge research. The UCARE program is one of the best avenues for students to get that exposure,” he said.

SEMICONDUCTOR MATERIAL FOR HIGH EFFICIENCY SOLAR CELLS

BY KHOA CHU



ABOVE: Martin Diaz is pictured in his laboratory at Scott Engineering Center. Photo: Erik Stenbakken

THERE ARE NUMEROUS research projects conducted in Scott Engineering Center, one of which is improving the efficiency of solar cells. Solar cells are used to convert the sun's energy into electrical energy. The production cost of each of these solar cells is high and the efficiency of current models is low.

The current research will increase the efficiency of the solar cells using a new type of semiconductor material called copper indium boron diselenide (CuInBSe_2). Currently, the use of copper indium gallium diselenide (CuInGaSe_2) material gives a bandgap of only 1.15 eV. Adding boron to the material would increase the overall bandgap to 1.5 eV, therefore increasing the efficiency of solar cells.

In the long run, these solar cells will save money and would be a good

form of renewable energy for the future.

Martin Diaz, a senior electrical engineering major, is currently doing his undergraduate research project through funding from UCARE and under the guidance of Dr. Rodney Soukup and Dr. Natale Ianno. Diaz is currently in his second year of UCARE and is a former McNair Scholar.

In his study, Diaz used several different techniques and systems, including magnetron sputtering system, X-ray Diffraction, Auger

Electron Spectroscopy, and spectroscopic ellipsometry.

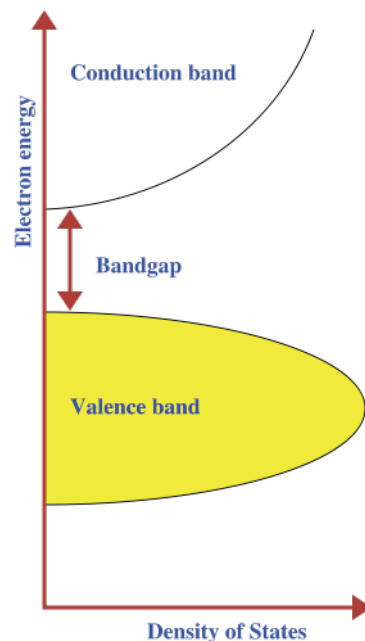
These techniques and systems were used to figure

out chemical content as well as other properties of the thin film depositions. These thin films contain the CuInBSe_2 material that would be used in studying the solar cells, and require the presence of a vacuum chamber.

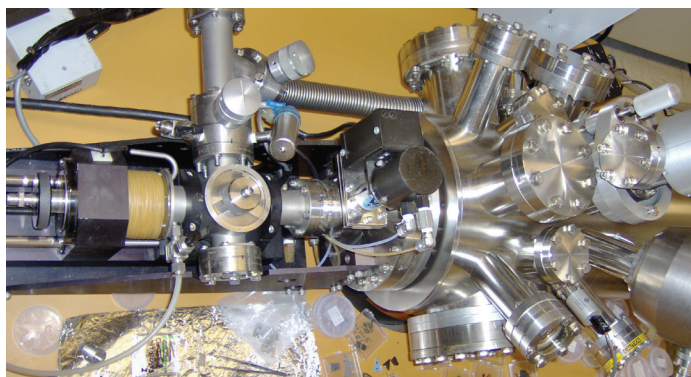
The process of selenization of the films was long and tedious, and was the most difficult part of the research.

In the solar cell, there are four different layers: on the bottom is the substrate, then the absorber layer, next is the window layer and finally on top is the grid.

Currently, Diaz is researching and working on the window layer of the solar cell. Another member of the research team, graduate student Chad Kamler, is working on the absorber layer of the solar cell.



ABOVE: This is the structure of a semiconductor. The bandgap is the difference between the Conduction band and the Valence band. Courtesy Photo: Wikipedia.org



ABOVE: The Auger Electron Spectroscopy is one of many pieces of equipment used in this research. Photo: Martin Diaz



ABOVE: Martin Diaz discusses his research with Chad Kamler, a graduate student in the lab. Photo: Erik Stenbakken

BP: What made you interested in solar cell research?

MD: It started during my sophomore year through the McNair Summer Research Experience, a summer program for students who are interested in attending graduate school. During the program, I had the chance to interview different professors in my department and was interested in the solar cell area.

BP: What do you like most about doing this research?

MD: My thought is that by doing this research I can possibly change the future or make a big impact on the energy sector. Also, the work involved is interesting and I like experimenting with the techniques and tools used in the lab.

BP: What do you dislike about doing this research?

MD: One thing I dislike about doing this research was the unreliability of the machine in the research lab. These machines require maintenance to keep them working properly. There were times when I was prepared to use the machine to conduct analysis, but because they weren't maintained correctly, I was set back hours or days to fix the machines. Also, some of the processes do take a long time to complete.

BP: Can you give some advice to prospective students who are interested in research?

MD: For those who want to do research, my advice is to start early

and do some research through the university web site to see which professors have a topic that interests you. Then after finding the professor with research you're interested in, set up a meeting time and ask questions about their research. Asking questions allows you to know the professor more and find out if they are the right person to work with. Don't start a research project you know you will dislike.

BP: What are your plans/goals for the future?

MD: After graduating from UNL, I hope to continue my education and obtain a Ph.D. in electrical engineering. While in graduate school, I hope to continue my research interest in solar renewable energy.

For more information about this research, contact Martin Diaz at martin.diaz@huskers.unl.edu; or Professor Rodney Soukup, Electrical Engineering, at rsoukup1@unl.edu.

HOSPITAL PATIENT DISCHARGE PROCESS IMPROVEMENT

BY TREVOR DOWNEY

THE INDUSTRIAL AND management systems engineering undergraduate curriculum at the University of Nebraska-Lincoln offers students a particularly solid foundation in manufacturing systems. Industrial engineering students gain a skill set for use in increasing production line efficiency and optimizing work flow.

For their senior design project, IE students Jeremy Jennings and Trevor Downey received the assignment of applying this skill set toward improving the patient throughput in a nursing unit at a local Lincoln hospital.

Mike Parish, operations improvement engineer for the BryanLGH hospital network, introduced the project to the students as one “with significant clinical and financial implications. My team and the nursing administration are excited to have additional attention devoted to this serious issue. Improving outpatient services improves operations for inpatient services.”

Parish encouraged the students to “analyze the current unit operations as a process, seeking the failure points and working to eliminate rework.”

Although not in a manufacturing environment, these are tasks the IE students were confident they could approach well.

The south end of the sixth floor in BryanLGH Hospital houses the Neurosciences Unit and tends to the needs of neurosurgery, stroke, spine surgery and progressive care patients.

Monica Burklund, RN, serves as nurse manager of the floor.

Jennings and Downey quickly recognized in their first meeting with Burklund that she occupies the authoritative role in the unit, much like a plant manager serves in a manufacturing plant. Burklund oversees the floor operations and handles the tasks of managing nurse staffing levels, patient admittance rates into the unit and other responsibilities. She is the direct counterpart to a plant manager in charge of staffing the machines on the shop floor and controlling line production rates.

Like any good manager, Burklund keeps her objectives in focus at all times for her unit—to serve the patients and maintain financial stability.

During one of many follow-up site visits to the Neurosciences Unit, Burklund appeared visibly exhausted and overburdened from another busy day in the unit. These generally exceptionally high unit utilization, high congestion days have become the standard, particularly near the



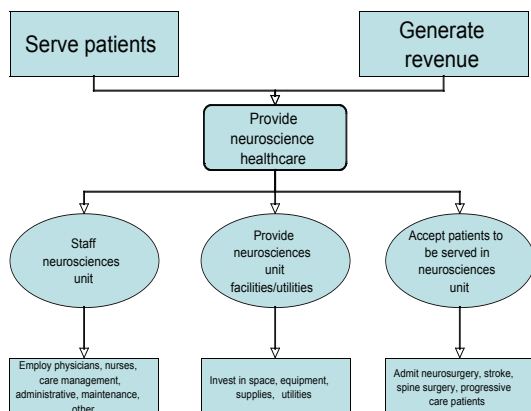
ABOVE: Unit charge nurse Amber Asperdon and engineering student Jeremy Jennings review datasheets tracking the current patient dismissal times. Asperdon explains the irregularities indicated by the data. Photo: Trevor Downey

end of the work week as physicians and nurses prefer to discharge patients before the weekend arrives.

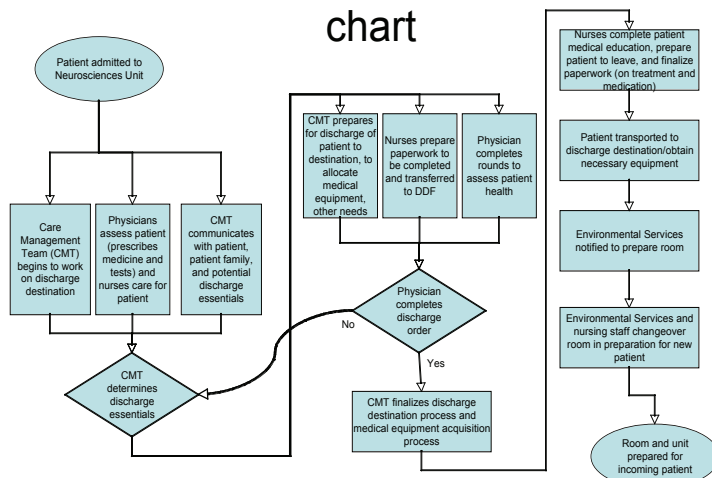
Burklund commented ironically, “It is good to be this busy, this maxed with work to do. A high volume, high flow of patients may make for a long day, but it means an easier time staying in the green [financially].”

Burklund’s unit has an average daily census of 13 patients, primarily progressive care patients, necessitating one of only 12 progressive care units on the floor.

Fundamentals Objectives Diagram (Neurosciences Unit)



Full patient discharge process flow chart



Each day, the flow in and out of the system is five to seven patients, making the unit one of the most highly utilized in the BryanLGH system. This is a point of contention for Burklund, who prides herself on maintaining control on her floor.

"I enjoy the challenges my work on the unit brings, but take a bit of offense with our reputation as the most chaotic and busiest unit in the system."

Consequently, the project of rectifying problems with the

congested discharge process was assigned to Jennings and Downey.

After meeting with the hospital's Operations Improvement team, the senior IE students understood the scope and complexity of the situation. The tasks were to assess the process for failure points and make recommendations to allow for quicker and higher turnover of beds in the unit.

The students first interviewed Burklund and a panel of hospital directors. Burklund noted that past efforts to improve the discharge process had positive effects, but significant room for improvement still existed.

Carol Miyoshi, an administrative officer, mentioned that a scripted discharge process was being

the destination and essential medical equipment needed by the patients being discharged.

The Care Management Team dealt with several in-hospital entities, such as rehabilitation clinics, but also external entities like patient families, insurance companies, nursing homes and various other secondary healthcare facilities. The students

quickly realized that providing medical attention to the patient in a hospital bed was only part of the role of this unit. A

significantly more important aspect included transferring the patients to reliable care outside of the unit.

The hospital panel also cited several additional complications, including issues with "patients feeling like they were getting the boot by nurses" due to streamlined discharge procedures, insurance companies unwilling to fund stays in certain secondary healthcare

"I enjoy the challenges my work on the unit brings, but take a bit of offense with our reputation as the most chaotic and busiest unit in the system."

developed by nursing students to standardize the role nurses play in discharge. However, further questioning revealed that many players had a role in this process. Not only did the list of players include patients and neurosciences nurses, but also physicians making rounds on the floor, and the Care Management Team of nurses and social workers tasked with planning

TESTING HENZLIK CROSSWALK EMISSIONS

BY BRIAN NEILSON



BEGINNING THIS YEAR, schools participating in the American Society of Civil Engineers (ASCE) Mid-Continent Conference were asked to submit a technical report for a competition concerning "Going Green in Civil Engineering." Junior civil engineering major John Coburn, president of University of Nebraska-Lincoln's ASCE chapter, is in charge of the chapter's report.

Coburn said the competition rules only allow one or two students to work on the project, with no faculty or graduate student help. The rest of the members of the ASCE chapter were hard at work preparing for the Concrete Canoe and Steel Bridge competitions, so Coburn decided to complete the technical report.

"My main interest is in the transportation area, so the first way I thought of going green was controlling automobile emissions," Coburn said. "Of all the pedestrian crosswalks on campus, the one in front of Henzlik Hall causes the most congestion due to pedestrians crossing freely, thus vehicles are forced to wait for up to three minutes at a time."

David Admiraal, associate professor of civil engineering and ASCE chapter adviser, noted the oddness of the intersection. "I know why it's there," Admiraal said. "Students don't want to walk all the way to the traffic signal to cross the street. But it's a bit unusual."

Coburn devised a project to quantify the amount of emissions released daily at the Henzlik

John Coburn tracks cars at the Henzlik crosswalk.
Photo: Brian Neilson



crosswalk and provide suggestions for improvement. "I was excited to tackle this opportunity," he said.

The methods of research were fairly simple. Coburn sat on a bench about 30 feet away from the crosswalk so as not to disturb the traffic. He recorded the amount of time vehicles stopped each time there were pedestrians crossing. He also recorded the number of vehicles stopped each time. These vehicles were classified as westbound or eastbound. The eastbound and westbound vehicles were further classified as passenger vehicles, UNL buses, or StarTran buses. Coburn made these studies on Mondays, Wednesdays and Fridays from 11:30 a.m. to 12:30 p.m., for three weeks during the cold month of February.

The report has two parts: the pedestrian study and the traffic study. The pedestrian study found that cars were idle at this crosswalk for about 57 minutes per hour within each one-hour time span. Coburn noted, "The United States Department of Energy has found that about one-third of a pound of carbon dioxide is released each minute of idling. So, for each sample period, approximately 19 pounds of CO₂ was released."

During each semester, this amounts to 855 pounds of CO₂ released during only these three hours per week. Coburn said that 30 hours each week are classified as "high density" traffic at the crosswalk.

He also noted that cars were stopped for up to three minutes at

peak times between classes. Coburn said he was surprised by the results and that "it was interesting on such a small scale."

The traffic study quantified the number of vehicles passing through the crosswalk during each hour of testing.

Coburn discussed three different solutions to decrease the emissions

in emissions may not be that significant.

The second option would be to build a pedestrian bridge or an underpass at the crosswalk. However, the construction equipment needed to construct one of these would significantly increase the emissions at the site. The unwillingness of students to use a bridge or underpass



ABOVE: A UNL bus approaches a drop-off site in front of Henzlik.
PHOTO BY: Brian Neilson

released at the Henzlik crosswalk. The first is to modify the bus route on campus so that UNL and StarTran buses stay on 16th Street without making the loop around Henzlik and Mabel Lee Halls. Coburn said university officials had already been discussing this option prior to this study.

One drawback is that it may be more inconvenient to students. Also, not many buses actually travel there each day. As such, the decrease

is another concern.

The third option is to close Vine Street between 14th and 16th Streets to through traffic. This would certainly make it safer for pedestrians. The amount of emissions currently released at the crosswalk would vanish. Coburn said it would also save several thousand dollars currently spent on running the traffic signal at 14th and Vine Streets.

ZNETH: ZERO NET ENERGY TEST HOUSE

BY LINDSAY SMITH



ABOVE: The outside of the Zero Net Energy Test House (ZNETH) in Omaha, Neb.
Photo: Lindsay Smith

THE NEXT TIME you're in Omaha, take some time and head over to The Peter Kiewit Institute. A group of architecture and engineering students are building ZNETH: Zero Net Energy Test House.

More than 200 students have been involved in ZNETH from the beginning, and the projects spans two campuses: UNL and UNO.

This project seeks to build a house that has a platinum Leadership in Energy and Environmental Design (LEED) rating.

LEED gives points to buildings constructed to be energy efficient: a platinum rating has a score of 90 to 136 points. LEED looks into eight areas: 1) Innovation and Design, 2) Location and Linkages,

3) Sustainable Sites, 4) Water Efficiency, 5) Energy and Atmosphere, 6) Material and Resources, 7) Indoor Environmental Quality and 8) Awareness and Education.

ZNETH got its start from an idea by Dr. James Goedert, an associate professor in Construction Systems. The planning phase began in May 2008 and construction followed about a month later. They are about half finished with the house and plan on completing construction by this fall.

So far, the project has received most of its money from grants. They recently received another \$100,000 grant for innovative research in early February. By the end of the project, the planners expect to receive about 50 percent of necessary funds through grants and the other 50 percent through donations.

Steven Cross, a UNO graduate student and project manager, said, "The whole idea is to use off-the-shelf technology that any builder can buy and to influence the expansion of LEED into the overall building community."

Zero net means the house produces more energy than it consumes. This feat is being attempted in various ways. The house features six, 18 feet by 15.5 inch solar panels and four, 9 feet by 15.5 inch Photovoltaic Laminate (PVL) solar panels, thin wall photovoltaic solar panels and a vertical axis wind turbine. They expect to produce about four kilowatts of energy using these systems.

The house, located just off 66th and Pacific Streets, is about 2,800 square feet. It contains four bedrooms and four bathrooms on two floors and a basement. The first floor walls are made of Insulated Concrete Forms (ICF) composed of a special Styrofoam based form with six inches of concrete poured in between; these will be covered with stucco. The floor features radiant heating and is made of bamboo, the insulation is soy based, and the sewage system is a grey water system; wastewater from washing dishes and clothes will be used to flush the toilets. The house also features a 150-foot geothermal heat pump and solar water heating, and will also possess energy star appliances.

The group is also landscaping the yard and including all natural/



ABOVE: Lindsay Smith stands next to Steven Cross, a UNO graduate and project manager for the ZNETH project.



native vegetation, a rainwater collection system for irrigation and a green roof (when a roof or section of roof features vegetation).

The project also aims to minimize waste during construction. To date, construction waste has filled only seven 32-gallon trashcans. Everything else has been recycled. Run-off water is collected at the base of the construction site in excess soil to be used in the landscaping.

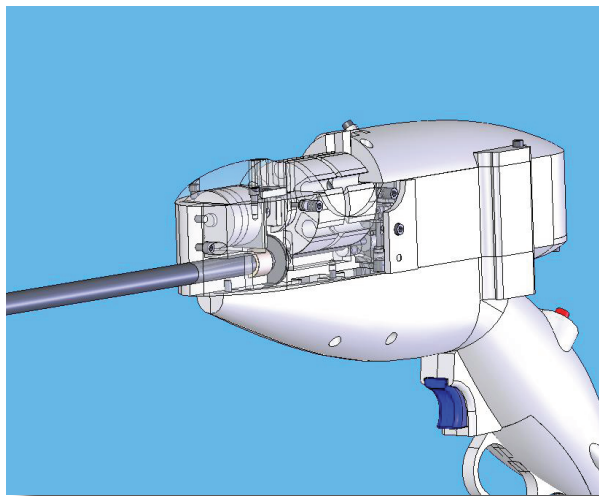
ZNETH will remain with the university for research purposes. The house will be monitored to measure water usage indoors and out, heat leakage, electricity usage and waste produced. A room in the basement will be the control room.

Three graduate students will live in the house and will monitor the total amount of energy produced and used. Excess energy will be placed into the OPPD grid for use elsewhere.

LEFT: Graduate students add energy efficient windows to the outside of the ZNET house. Courtesy Photo: Engineering Communications

MINIMIZING THE MINIMAL IN SURGERY

BY JOEL SCHULTE



ABOVE: A 3D model view of the Laparoscopic Surgery Tool. Courtesy Image: Dr. Carl Nelson, Mechanical Engineering

LAPAROSCOPIC SURGERY, often referred to as "minimally invasive" surgery, is just that. A very small incision, often less than one centimeter, is made with a port-like device called a trocar, giving access to the operation area. Since the incision is so small, a camera is usually inserted to view the area. It may seem to be an already sophisticated procedure. But as is common with any type of surgery, reducing the guessing game and making things quick is vital.

Such is the inspiration for Dr. Carl Nelson, associate professor of Mechanical Engineering. His ongoing project involves the development of a multi-function laparoscopy tool, with several tips to allow the changing of tools without having to remove the entire tool. An increase in efficiency would improve quickness and effectiveness of many procedures as well as reducing the likelihood of patient trauma.

According to Nelson, in order to do this, a good amount of research was needed on the surgical tool tips and the actual procedures.

Evan Luxon, a senior in mechanical engineering, was on the hunt for a research project at a good time.

"I was interested in the medical applications of mechanical engineering," said Luxon. "Dr. Nelson was on this list and was working on a project that was a great fit with what I was hoping to do."

While he knew what he was getting into, Luxon noted it was a big learning experience from the get-go.

"Up until that point, I had limited design experience and was challenged to learn what I needed to know before I actually produced a certain design," he said. "Fortunately, my first task was to reverse-engineer laparoscopic tools already in use to better understand their geometry and kinematics, which allowed me to become proficient in SolidWorks and to better understand good engineering design."

Another key part of the project was statistical research of the surgical tool tips most commonly used, as well as the sequencing used when surgeons plan procedures. The research team found a great resource from an archive of laparoscopic surgery videos from the University of Nebraska Medical Center.

"I was constantly amazed with both the inner workings of the human body and the incredible skill of the surgeons needed to perform delicate tasks," Luxon said.

The multi-function tool is designed to have quick and flexible interchanges between tips—already an obvious advancement. Researching surgical procedures themselves takes it a step further.

"Where it does have an impact is in the personalization of the tool for certain surgery types and certain surgeons," said Luxon. "For a particular surgery, there may be a strong relationship between two tool types in terms of interchanges between these tools."

Luxon added that getting involved with UCARE went beyond boosting his resume. "When I started this project, I knew I wanted to attend graduate school. Conducting research with Dr. Nelson was great because it allowed me to not only be more competitive in the application process, but to clarify my own research interests."

The combination of personal interest and flexible hours allowed Luxon to benefit from the UCARE experience, all while keeping up with his classes. "Overall, the research was a true supplement to my coursework," he concluded.

HOSPITAL, from pg. 9

facilities and inconsistent rounds by physicians. Eventually the students understood the limitations imposed on the system and their ability to rectify the problem.

Jennings acknowledged the “many constraints in the system: late physician rounds, complications in discharging patients into secondary care facilities and general patient care aspects.” Many facets of the process seemed to be likely candidates for bottlenecks or points within the system that limited the overall flow through the entire system. Consequently they turned to the theory of constraints, a management philosophy aimed at identifying critical constraints, bottlenecks and production capacity restrictions.

The hectic schedules and independence of the physicians limited improvement of the first constraint. The complexity of working with government health entities, private health facilities and insurance companies made constraint two overbearing. The predominately internal activities related to the third constraint opened up ways to improve this area and the overall process.

In April, Jennings and Downey presented their findings to IE faculty, E-Week guests and interested hospital personnel. Upon analyzing the results of the project, the two soon-to-graduate engineers had several recommendations.

“We suggest the hospital should focus on getting the physicians, nurses and hospital administration

on the same page in terms of addressing the patient throughput,” said Jennings. “This seems to be the most pressing bottleneck of the system. An administrative meeting with the three groups to emphasize the importance of timely physician rounds could greatly improve patient flow.”

Additionally, the recommendations include increasing the number of personnel on the CMT to allow for one person devoted to the discharge of patients. The students considered recommending converting some of the general care units into the highly utilized progressive care units, but after further analysis, the investment does not seem cost effective or even necessary, according to daily census values on the floor.

Further insights gained by the students include an appreciation for readily available and accessible data, something lacking in this scenario, and the overall approach to problem solving.

Initially defining and understanding the problem proved time-consuming and frustrating, the students said. As the scope of the project expanded, the possibility of producing fruitful work seemed less likely. However, mapping out the current situation has already been greatly appreciated by the hospital staff and administration.

HENZLIK, from pg. 11

A major drawback to closing this section of Vine Street is the traffic on football Saturdays around Memorial Stadium.

“A plan can be created to temporarily open up the street to traffic for each home game,” he said. “Despite this drawback, there are so many advantages to doing this.”

The written report was submitted to ASCE. Coburn will also give a short presentation at the Mid-Continent Conference.

“John has been a very good leader,” Admiraal said. Besides Coburn’s report, Admiraal said that prospects look great for UNL’s Concrete Canoe and Steel Bridge teams at the competition.

“I’m pretty proud of how they’ve progressed,” Admiraal said. “They’ve put the proper amount of time put into it and done a terrific job this year.”

Admiraal added that ASCE is a great way to learn things about the trade that aren’t found in the classroom. There are numerous opportunities to meet professionals and network with upperclassmen in the civil engineering department.

After the Mid-Continent Conference, Coburn is also considering submitting his proposals to Parking and Transit Services or to Chancellor Harvey Perlman.

Editor’s Note: John Coburn received second place at the conference.



E-WEEK '09

E-Week '09 focused on "Inventing the Future" during its 96th year at the College of Engineering. Held April 20-24, the week featured events for current students, such as a mini-golf tournament through the engineering complex, dodgeball and pitch tournaments, free pancakes, and the new Mr. Engineer pageant. E-Week culminated in its annual Open House on Friday, featuring senior design presentations and the graduate student symposium, as well as the keynote speaker, OPPD President Gary Gates.

Want to get involved in the Blueprint?

For more information about the Blueprint and how to join the staff, e-mail bneilson44@gmail.com.